

12.—The Mygalomorph spider genus *Stanwellia* Rainbow & Pulleine (Dipluridae) and its relationship to *Aname* Koch and certain other diplurine genera

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Abstract

The genus *Stanwellia* Rainbow and Pulleine is redefined and distinguished from other Australian diplurine spiders. Four already named species are attributed in the genus, two new species described and several unnamed populations are discussed. Significance of the biology and distribution of the genus and its New Zealand affinities are mentioned. The genus *Aname* Koch is discussed and the systematic position of species hitherto included in this genus reassessed.

Introduction

The genus *Stanwellia*, although common and widely distributed in South Eastern Australia, has received little mention in the literature records of Australian Mygalomorphae. This is due in part to its confusion with the poorly defined genus *Aname* Koch. *Aname* has provided the dumping ground for numerous diplurine species, many of which properly belong in other genera (see Table 1).

The uncertainty of generic placement of many Australian diplurines is because of the sexual dimorphism of adults, a feature common to all Mygalomorphae. The palp and modifications of

the anterior legs of mature male Mygalomorphs have customarily been used in diagnoses of genera and species. However the bulk of Mygalomorphs in museum collections consist of haphazardly or randomly collected specimens. Thus many earlier systematists have had little evidence on which to associate males and females. This has often resulted in species being attributed to the wrong genus and occasionally an incorrect specific association of a male and female. The author has been able to determine the correct relationship of males and females of many species and thereafter to establish generic distinctions, by the following methods. Immature males have been collected from burrows found in aggregates of specimens of which the identity of the females is known. These immature males, recognizable as such by the slightly swollen palpal tarsi, have then been reared to maturity in flower pots of soil. Secondly, pit-traps into which wandering males fall, have been set down in sites where females of known species have been observed. Thirdly, wandering males have sometimes been fortuitously collected 'on location'. Search has then revealed conspecific females in their burrows.

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Table 1

Species originally attributed to *Aname* Koch and their revised generic positions

Species	Revised generic position
<i>Aname arborea</i> Hogg 1901	= <i>Stanwellia grisea</i> (Hogg 1901)
<i>Aname bicolor</i> Rainbow 1914	= <i>Atrax bicolor</i> (Rainbow 1914) (*)
<i>Aname armigera</i> Rainb. & Pull. 1918	= <i>Dekana armigera</i> (Rainb. & Pull. 1918) or (?) <i>Aname armigera</i>
<i>Aname aurea</i> Rainb. & Pull. 1918	= <i>Dekana</i> sp. prob. <i>grandis</i> ?
<i>Aname butleri</i> Rainb. & Pull. 1918	= <i>Stanwellia grisea</i> (Hogg 1901)
<i>Aname coenosa</i> Rainb. & Pull. 1918	= <i>Aname coenosa</i> Rainb. & Pull. 1918 or <i>Dekana</i> sp.
<i>Aname comosa</i> Rainb. & Pull. 1918	= <i>Dekana diversicolor</i> Hogg 1901 (?)
<i>Aname confusa</i> Rainb. & Pull. 1918	= <i>Stanwellia nebulosa</i> Rainb. & Pull. 1918
<i>Aname decora</i> Rainb. & Pull. 1918	= <i>Stanwellia hoggi</i> (Rainbow 1914)
<i>Aname flavomaculata</i> Rainb. & Pull. 1918	= <i>Ixamatus flavomaculatus</i> (Rainb. & Pull. 1918)
<i>Aname fuscocincta</i> Rainb. & Pull. 1918	= <i>Ixamatus fuscocinctus</i> (Rainb. & Pull. 1918)
<i>Aname grandis</i> Rainb. & Pull. 1918	= <i>Dekana grandis</i> (Rainb. & Pull. 1918)
<i>Aname grisea</i> Hogg 1901	= <i>Stanwellia grisea</i> (Hogg 1901)
<i>Aname hirsuta</i> Rainb. & Pull. 1918	= <i>Dekana diversicolor</i> Hogg 1901 (?)
<i>Aname intricata</i> Rainb. & Pull. 1918	= <i>Chenistonia intricata</i> (Rainb. & Pull. 1918)
<i>Aname maculata</i> Rainb. & Pull. 1918	= <i>Chenistonia tepperi</i> Hogg 1901
<i>Aname minor</i> Kulcz 1908	= ? <i>Ixamatus</i>
<i>Aname nebulosa</i> Rainb. & Pull. 1918	= <i>Stanwellia nebulosa</i> (Rainb. & Pull. 1918)
<i>Aname pallida</i> Koch 1873	= <i>Aname pallida</i> Koch 1873
<i>Aname pellucida</i> Hogg 1901	= <i>Stanwellia grisea</i> (Hogg 1901)
<i>Aname pexa</i> Hickman 1929	= <i>Stanwellia pexa</i> (Hickman 1929)
<i>Aname pulchra</i> Rainb. & Pull. 1918	= <i>Dyarcyops pulchellus</i> (Rainb. & Pull. 1918) (†)
<i>Aname robusta</i> Rainb. & Pull. 1918	= <i>Dekana grandis</i> (Rainb. & Pull. 1918)
<i>Aname tasmanica</i> Hogg 1902	= <i>Aname tasmanica</i> Hogg 1902
<i>Aname villosa</i> Rainb. & Pull. 1918	= <i>Aname villosa</i> Rainb. & Pull. 1918
<i>Aname platypus</i> (L. Koch in Ausserer 1875) (‡)	= ?

Note: The types of all the above species (except *Brachythele platypus* Koch, *Aname bicolor* Rainbow and *Aname pexa* Hickman) have been seen by the author.

(*) Synonymy noted by Rainbow (1918) and Hickman (1964)

(†) New combination; originally described as *Arbanitis pulchellus* Rainbow and Pulleine 1918

(‡) Originally described as *Brachythele platypus* L. Koch in Ausserer 1875

Along with deliberate attempts to establish male/female associations of species on biological grounds, all extant types of Australian Mygalomorphae have been traced and most of these have been examined by the author. As a result it has been possible to make valid groupings of species into genera, which may now be more clearly defined.

Taxonomy of Diplurinae

The main purpose of the present paper is to discuss *Stanwellia* as distinct from other diplurine genera. Diplurine spiders are distinguished from the other sub-families of the Dipluridae by having two pairs of spinnerets and the paired tarsal claws bipectinate. They are generally large, dark coloured spiders and live in burrows in the ground or sometimes in silk tubes in rotten logs or moss and friable bark on the boles of trees. The following genera have been recorded from Australia: *Chenistonia*, *Dekana*, *Ixamatus*, *Aname*, *Stanwellia*, *Kiama* and *Sungenia*. The genus *Troglodiplura* described from the dried fragments of a single specimen found in a Nullarbor cave is possibly a 'fossil' genus. The present author tentatively regards *Sungenia* as a synonym of *Chenistonia*.

Status of the genus *Aname*

The holotype of *Aname pallida* Koch, which is the type species of *Aname* Koch, is lodged in the Hamburg Museum, Germany (sighted by the author in 1958). It was obviously a freshly moulted specimen when collected, hence the unpigmented or "pale" colour.

ANAME Koch 1873

Aname Koch, 1873. Die Arachniden Australiens, p. 465. Type species by original designation *A. pallida* Koch, 1873. *ibid.* p. 465-7. Pl. xxxv, F.8 Type locality: Bowen, Queensland. Collector probably Amelia Dietrich.

Description of holotype of *Aname pallida*

Although badly macerated the following features were recognisable:

Carapace length 6.5 mm; procurved fovea; eyes on a pronounced tubercle set back from margin and anterior row distinctly procurved (fig. 1); sternum badly distorted, posterior sigilla away from margin, misshapen but broadly oval (fig. 2). Labium broad, anteriorly indented and without cuspules or spines; cuspules on maxillae; chelicerae with teeth on promargin of furrow only, no apical teeth (i.e. no pseudo-rastellum). The palpal tarsus was swollen indicating that the specimen was an immature male; a pair of basal spines. Scopula present on palpal tarsus, and tarsi and metatarsi of legs I and II, a few scopulate hairs on tarsi III and IV. *Spines*. Tarsi of all legs without spines. I, Metatarsus ventral spines; Tibia ventral bristles. II, Metatarsus ventral spines; Tibia ventral spines and bristles. III, Metatarsus with spines on all faces; Tibia ventral and dorsal spines. IV Metatarsus with spines on all faces; Tibia ventral bristles and dorso-retrolateral spines; all femurs with dorsal bristles. Paired tarsal claws bipectinate. Abdomen macerated but appeared dorsally to have been of uniform colour.

From the above, a diagnosis of the genus *Aname* can be made as follows:

Carapace with procurved fovea; eyes on pronounced tubercle; labium broad and anteriorly indented, without cuspules; cheliceral furrow with teeth on promargin only; no pseudo-rastellum; posterior sternal sigilla away from margin (possibly variable); a proximal pair of ventral spines on palp tarsus; no spines on tarsi of legs; scopula on tarsi of palp and at least tarsi I and II.

Relationship of *Aname* to other diplurine genera

Thus *Aname* on the above characters can be distinguished from *Chenistonia*, which has a straight fovea and long narrow posterior sternal sigilla (F. 3) and possibly from *Dekana*, which although usually with a procurved fovea has narrow elongate posterior sternal sigilla. It has been observed that specimens attributable on morphology (not considering the doubtful feature of sternal sigilla) to either *Dekana* or *Aname* can be distinguished in life by the type of burrow constructed. *Dekana* specimens (males and females) build a forked (wish-bone or Y-shaped) burrow with only one arm of the fork opening completely on the surface; specimens which build a simple, unbranched burrow have been attributed to *Aname*. Both groups are widely distributed throughout Australia. *Dekana* has probably been derived from *Aname*. However, in the absence of an authentic male, the features listed above, alone, would not unequivocally distinguish *Aname* from *Ixamatus*, the type locality of whose type species is also allegedly Bowen, Queensland. The male of *Ixamatus* has no tibial spur on the first leg, *Chenistonia* and *Dekana* have a spur (fig. 4). The female of *Stanwellia* differs from *Aname*, and all other known Australian diplurines, by having no spines on the palp tarsus (figs. 7, 7a).

Since at least nineteen of the subsequently described twenty-five species of *Aname* can readily be attributed to various other named and more clearly defined genera (although of later erection) the genus *Aname* itself is thus reduced in size (see Table 1). The rationale for transferring the various species of *Aname* to other genera (see Table I) will be discussed along with the appropriate genus (Main in preparation).

By inference, species in eastern Australia (with the exception of certain undescribed forms which do not have leg scopula on the females) which do not by definition fall into *Dekana*, *Chenistonia*, *Ixamatus* or *Stanwellia*, might well be left in *Aname* or transferred to *Aname* from other genera. The definition of *Aname* could then be enlarged to include the following characteristic: male with spine-bearing spur on tibia I. This has been deduced from the observation that there are in fact diplurine species in coastal and mountainous Queensland, the females of which could be attributed to either *Aname* (as defined above) or *Ixamatus*, but in which the males have a tibial spur, thereby excluding them from *Ixamatus*.

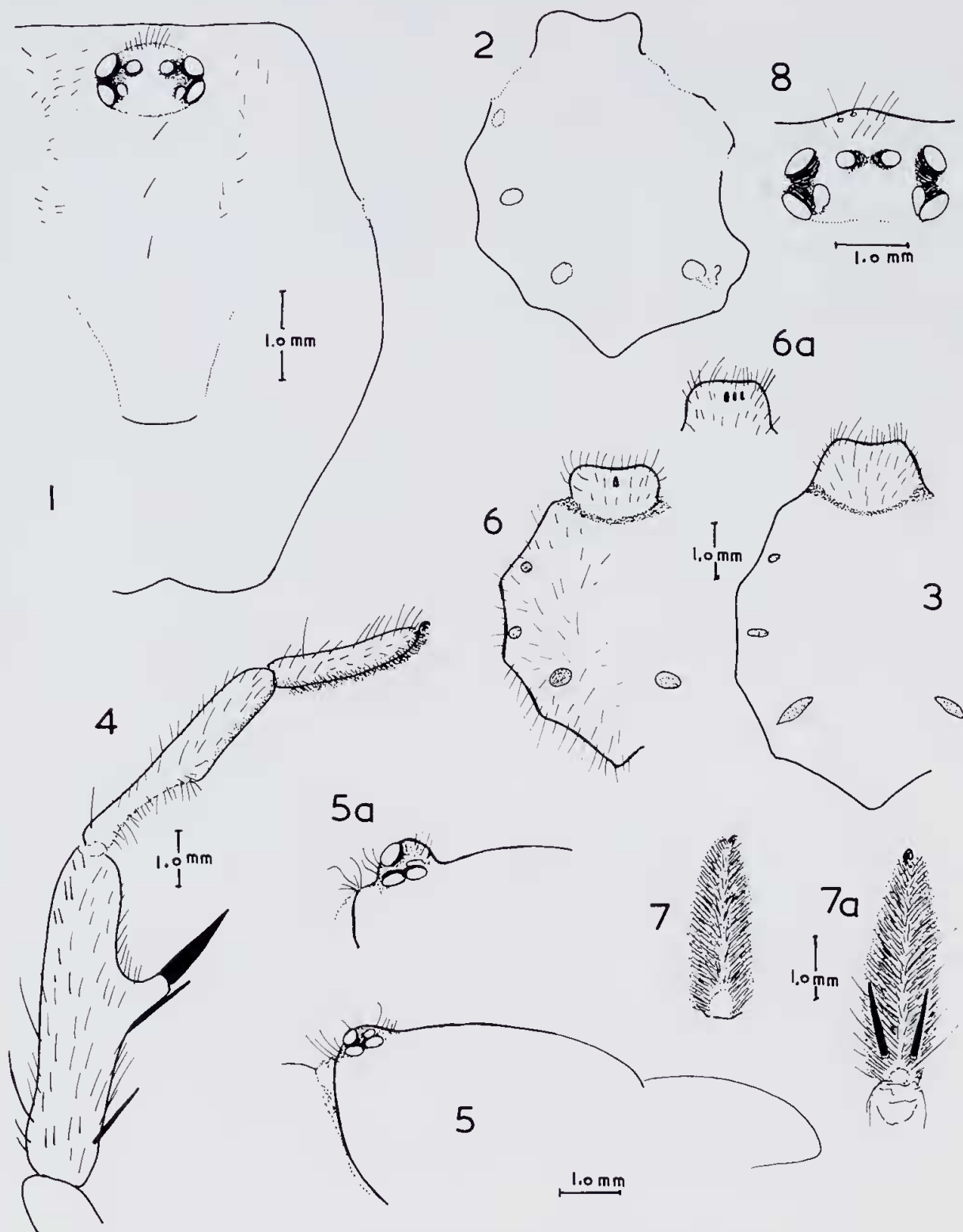
The recently described genus *Kiama* (Main and Mascord 1971) is distinguished from the

above genera as follows: from *Chenistonia*, *Dekana* and *Aname* by the absence of a tibial spur in the male and the presence in the female of several ventral spines instead of a basal pair on the palp tarsus; it differs from all the other diplurine genera in the deeply procurved U-shaped fovea and broad sternum with large,

tear-drop shaped sigilla and from all genera (except an undescribed form in the MacPherson Range) by having no leg scopula in the female

STANWELLIA Rainbow and Pulleine 1918

Stanwellia Rainbow & Pulleine, 1918. Rec.Austr. Mus. 12: 164. Type species by monotypy *Stanwellia decora* Rainbow & Pulleine 1918 = *Stanwellia hoggi* (Rainbow 1914).



Figures 1-8.—1, 2, *Aname pallida* Koch, Holotype. 1, carapace, note eyes and fovea; 2, sternum, damaged and shape distorted. 3(♀), 4(♂), 5a(♀), *Chenistonia*. 3, sternum and labium; 4, right leg I, retrolateral view, note tibial spur; 5a, profile of eye tubercle. 5, 6, 6a, 7, 8, *Stanwellia*. 5, profile of eye; 6, sternum and labium; 6a, labium of another specimen with more cuspules. 7, ♀ palp tarsus, ventral; 8, *S. decora* Rainbow and Pulleine, lectotype, dorsal view of eyes [= *S. hoggi* (Rainb.)]. 7a, *Chenistonia*, ♀ palp tarsus, ventral.

Description

Carapace long and narrow, roughly a truncated oval; caput low. *Fovea* shallow, straight or very slightly procurved. *Eyes* raised but not on a distinct tubercle, group broader than long (fig. 5). *Sternum*, long and narrow; sigilla usually small and submarginal (fig. 6).

Labium broad, anteriorly straight or only slightly indented, usually with a few anterior cuspules (fig. 6, 6a).

Chelicerae with continuous row of teeth on promargin of furrow only, with a small basal group on retromargin; sometimes with teeth or stout bristles (like a rastellum) above fang base (fig. 29). Palp tarsus without spines (fig. 7), scopula present, claw with prolateral row of teeth only. Legs, no spines on anterior two pairs of tarsi. Scopula present on tarsi I and II and apical part of metatarsi I and II, usually present on tarsi III, present or absent on tarsi IV. Legs often with pattern of dark blotches or annulations. Abdomen usually with speckled pattern or irregular bands consisting of a dark, median branched area (approximating to the heart outline) with laterally, an irregular pattern of yellow patches. Two pairs of spinnerets, terminal joint of posterior pair elongate and pointed. Tibia I of male with spines but no spur (figs. 9, 15, 19, 21, 26, 35 and 42). Palp tibia with few or no spines. Stigma broad and flanged, with embolus extending as a point at tip. No clear demarcation between stigma and bulb.

Diagnosis

No spines on female palp tarsus; eyes may be raised but not on a tubercle; posterior sternal sigilla small, often round, sub-marginal; truncate labium usually with cuspules; characteristic dark "smudges" or speckled pattern on legs in life. Male lacks spur on tibia I; stout, broad palpal stigma indistinctly demarcated from bulb. Female internal genitalia with either two large basal mound-like areas with ducts leading to small vesicles or a single basal area from which the vesicle stalks arise.

Affinities

Very similar to the New Zealand genus *Aparua* from which it is distinguished by the latter having a double row of teeth on the female palp claw.

The genus has no close affinity with any other Australian genus.

The present author recognises the following six species: *Stanwellia hoggi* (Rainbow), *S. grisea* (Hogg), *S. pexa* (Hickman), *S. nebulosa* (Rainbow and Pulleine), *S. occidentalis* sp. nov. and *S. inornata* sp. nov. Additional specimens, the specific status of which is undecided, have also been collected by the author from several localities.

Stanwellia hoggi (Rainbow 1914)

Chenistonia hoggi Rainbow 1914. Rec. Austr. Mus. 10: 240-2.

Stanwellia decora Rainbow & Pulleine 1918. Rec. Austr. Mus. 12: 164-5.

Aname decora Rainbow and Pulleine 1918. Rec. Austr.

Mus. 12: 149-150. HOMONYM.
Stanwellia decora Rainbow and Pulleine in Main "Spiders of Australia" (Jacaranda 1964, 1967).

Types

Holotype of *Chenistonia hoggi* Rainbow: female from North Sydney (Australian Museum K31010).

"Type" of *Stanwellia decora* Rainbow and Pulleine: Female from Stanwell Park, Australian Museum K40955, herein designated as the lectotype.

"Cotype" female, *S. decora* from Stanwell Park N.S.W., Aug. 1910, in the South Australian Museum, herein designated as paralectotype.

Holotype female, *Aname decora* Rainbow and Pulleine. Clifton Gardens, Sydney (Australian Museum K 40923).

Notes on synonymy

Since by transferring the species *Aname decora* Rainbow and Pulleine to *Stanwellia* this name becomes a homonym of *S. decora* Rainbow and Pulleine, it should be replaced by another name. However since *A. decora* is here regarded as a synonym of *S. decora* this is not necessary. Although *A. decora* has precedence in the same publication over *S. decora*, under the provisions of Article 24a of the International Code for Zoological Nomenclature, it is justifiable to give priority to *S. decora*. Furthermore both *A. decora* and *S. decora* are junior synonyms of *Chenistonia hoggi* Rainbow.

Description of lectotype of *Stanwellia decora* Rainbow and Pulleine.

Carapace, length 9.0 mm, width 7.7. *Fovea* slightly procurved. *Eyes* raised, length of group 0.85 mm, width 1.85 mm, anterior row almost straight in front, very slightly procurved (fig. 8).

Chelicerae, left paturon with one small and nine large teeth on promargin, about 21 in basal posterior cluster.

Labium, length 1.0 mm, width 2.0 mm, 2 cuspules.

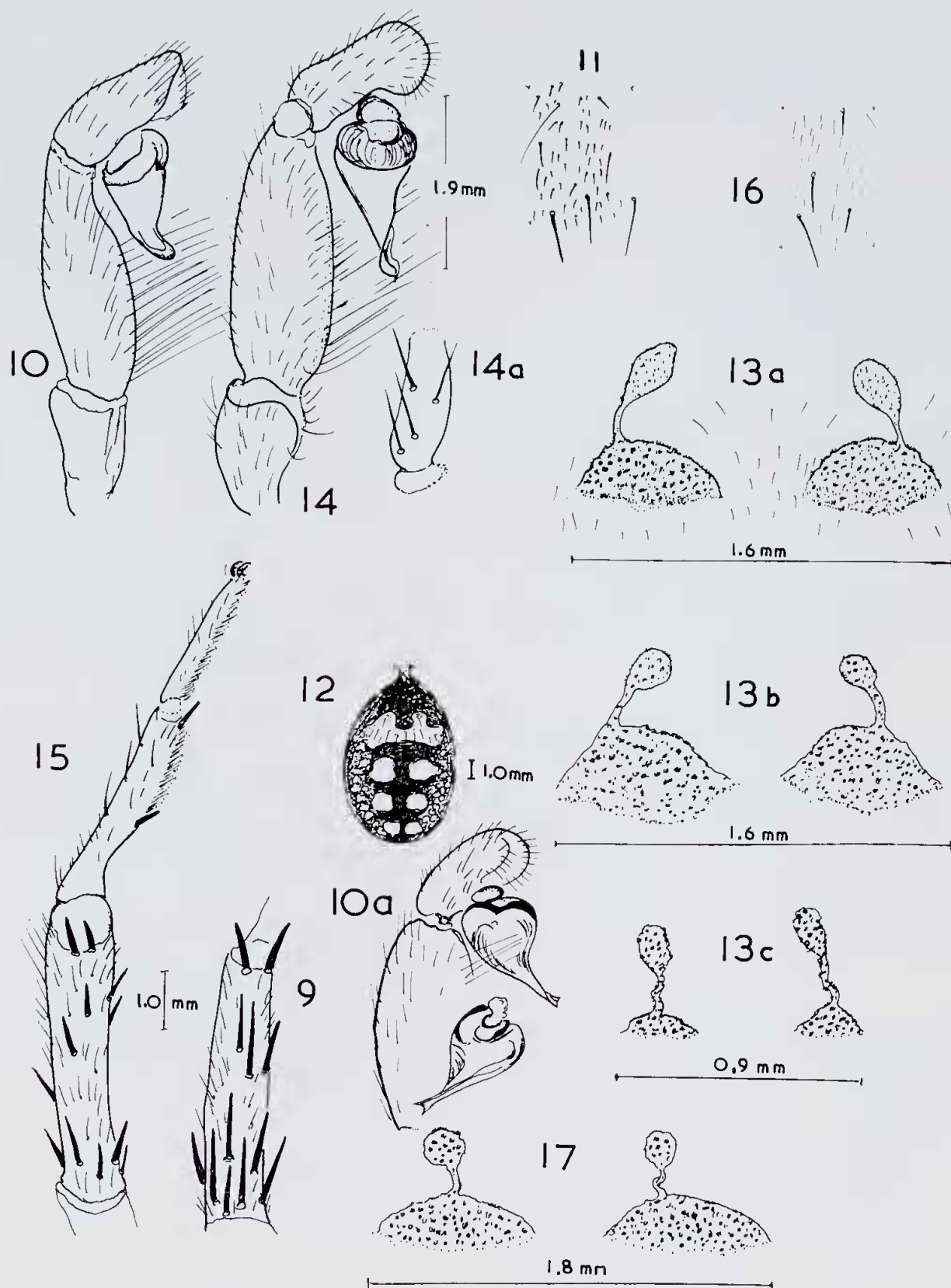
Sternum, length 5.0 mm, width 4.1 mm, Posterior sigilla small oval, submarginal.

Legs: Scopula complete on all tarsi and metatarsi I and II, apical half of metatarsi III and a few apical hairs on metatarsi IV

Leg formula	4	1	2	3
	3.14	2.91	2.68	2.36

	F	P	Ti	Mt	Ta	Total
Palp	5.0	2.6	3.5		3.4	14.5 mm
I	7.6	4.6	5.3	5.0	3.7	26.2 mm
II	6.8	4.5	4.8	4.5	3.6	24.2 mm
III	5.8	3.6	3.6	4.8	3.5	21.3 mm
IV	7.5	4.1	6.2	7.0	3.5	28.3 mm

Width patella I at knee = 1.5, Tibial index = 15.15
Width patella IV at knee = 1.5, Tibial index = 14.56



Figures 9-17.—9, 10, 10a, ♂ *S. hoggi* (9, 10 specimen in Hope Museum). 9, right tibia I, ventral; 10, right palp, retrolateral; 10a (Kiama specimen) right palp (Australian Museum KAI). 11, 12, 13a b c, 14, 14a b, 15, *S. Grisea* (Hogg). 11, mid-dorsal abdominal pilosity (number of hairs and bristles in area 1.0 mm across), (BYM 65/11); 12, dorsal abdominal pattern (BYM 65/32); 13a, b, c, ♀ internal genitalia (BYM 65/11, 65/16, 65/693 respectively); 14, ♂ right palp retrolateral, 14a, tibia prolateral (BYM 65/27); 15, right leg I, prolatero-ventral (BYM 65/27); 16, 17, *S. nebulosa* (Rainbow). 16, abdominal pilosity (BYM 59/425); 17, ♀ internal genitalia (BYM 59/425).

Spines: Absent from all tarsi, including palp. Present on following segments:

- I, Metatarsus, 3 ventral; Tibia, 4 ventral, 2 prolateral; Femur, 1 dorsal.
- II, Metatarsus, 4 ventral, 1 prolateral; Tibia, 6 ventral bristles, 2 prolateral; Patella, 1 dorsal; Femur, dorsal? (detached).
- III, Metatarsus, 6 ventral, 6 dorsal, 2 prolateral, 1 retrolateral; Tibia, 6 ventral bristles, 2 prolateral, 2 retrolateral; Patella, 3 prolateral; Femur, 3 dorsal bristles.
- IV, Metatarsus, 7 ventral, 6 dorsal, 4 prolateral, 1 retrolateral; Tibia, 6 ventral, 2 retrolateral; Femur, dorsal bristles.

Palp, Tibia, 4 apical spines, also 4 sockets where spines or bristles have been removed.

Abdomen: Brownish colour with yellow mottlings, about 12.00 mm long.

Specimens examined

Types and other specimens named by Rainbow: Lectotype, Paralectotype and three other specimens labelled as *Stanwellia decora* by Rainbow: two Females (K40958) and one immature (K41456), all from Stanwell Park August 1906, (examined by present author in 1954); these specimens agree generally with the lectotype. Holotype of *Aname decora* Rainbow & Pulleine, and holotype of *Chenistonia hoggi* Rainbow.

Other specimens: Males. Two previously unidentified male specimens in the Hope Museum, Oxford, collected from Sydney in 1869; one of these specimens with four labial cusps, ten ventral spines on tibia I (fig. 9) and palp with bluntly pointed stigma (fig. 10); no spines on palp tibia.

A male specimen (Australian Museum KA1) collected by R. Mascord from Kiama, N.S.W., 22 June, 1965. The specimen was found wandering at night near burrows of *Dyarcyops* with which genus it was at the time identified. The specimen has a carapace length of 7.7 mm, marginal bristles present; labium with four labial cusps; abdomen with four pairs of yellowish blotches on dark brown background; colour generally dark brown with golden sheen. The palp tibia and stigma as figured (fig. 10a); right palp with no prolateral spines on tibia, left palp tibia with two delicate prolateral spines. Ten ventral spines on tibia I, but with different disposition on the left and right legs.

Leg formula

4	1	2	3
3.36	3.07	2.87	2.66

Tibial index I = 12.35; Tibial index IV = 12.50

Stanwellia grisea (Hogg 1901)

Aname grisea Hogg, 1901. Proc. Zool. Soc. London, 1901 (vol. 2): 252-254, fig. 30.

Stanwellia grisea Main: "Spiders of Australia" (Jacaranda 1964, 1967).

New synonymies:

Aname arborea Hogg, 1901. Proc. Zool. Soc. London, 1901 (vol. 2): 254-5, fig. 31.

Aname pellucida Hogg, 1901. ibid pp. 255-6, fig. 32.

Ixamatus gregori Hogg, 1901. ibid pp. 258-9, fig. 33.

Chenistonia major Hogg, 1901. ibid pp. 263-4, fig. 36.

Aname butleri Rainbow & Pulleine 1918. Rec. Austr. Mus. 12: 157-8, fig. 112. (Lectotype only; see note below on types).

Notes on types and synonymies

Aname grisea, *arborea*, *pellucida*, *Ixamatus gregori* and *Chenistonia major*, all in British Museum (N.H.) and all seen by the author in 1958:

Aname grisea: The "type" series (30.2.10-15) consists of three juvenile specimens, the largest (which is here designated as lectotype) with carapace length of 4.0 mm. All are pierced longitudinally with pins but are now in spirit. Locality, Macedon, Victoria (Hogg 1901).

Aname arborea: A female (herein designated as lectotype) and juvenile in the one tube (03.2.10-17); female with carapace length of 5.5 mm. Locality, Macedon (Hogg 1901).

Aname pellucida: Labelled 'type' and 'collected at Bacchus Marsh' (03.2.10-16). The tube contains a juvenile specimen and badly damaged female with carapace length of 8.0 mm which is herein designated as lectotype.

Chenistonia major (03.2.10.7.8): Seven females, with carapace lengths of 4.0 mm, 8.0, 10.0 (3 specimens), 10.5, 11.0 mm (the latter designated as lectotype). Locality, Macedon.

The specimens described by Rainbow and Pulleine (1918) as males of *Chenistonia major* Hogg (two specimens in the one tube, labelled "allotype" K40968, Australian Museum) are not the same species as the specimens named by Hogg (1901) as *Chenistonia major* (here synonymised with *Stanwellia grisea* (Hogg) but are the previously undescribed males of *Chenistonia tepperi* Hogg. Also, in the South Australian Museum there are two male specimens labelled "cotype ♂, *Chenistonia major* Hogg ♂, Morialta Gully S.A.", these are thought to be from Rainbow and Pulleine's collection. They are not *Stanwellia* specimens but either *Chenistonia* or *Dekana*.

Ixamatus gregori, a single adult male specimen (1903.2.10.14), labelled "type" which is therefore the holotype. Locality, Macedon.

Aname butleri, Australian Museum (K41482) and seen by the author in 1954. It is labelled 'type' and the locality is Merri Creek, Melbourne. I herein designate it as lectotype. This specimen (lectotype) is not a female but (as deduced from the swollen palps) an immature male. In the Australian Museum there are four additional females labelled as *Aname butleri* (K41614, also labelled "type" (one specimen) and K41615, labelled "co-types" (three specimens)). These four specimens are not Diplurids but Ctenizids and I regard them as *Dyarcyops*. With K41614 there is another label stating:—"this is not holotype (D. R. McAlpine 22.8.52)."

Diagnosis

Female: Colour in life generally a dark brown; dorsum of abdomen with short, sparse pile (fig.

11), pattern of yellow mottlings on dark background, variable, may be of uniform 'speckles' or consist of lateral yellow blotches alongside a dark median section overlying the heart (fig. 12), sometimes posteriorly with dark bands; venter usually uniformly pale or with dark flecks; legs paler usually with dark blotches, sometimes with distinct annulations. Carapace low, caput rounded. Labium with variable number of cusps, two to six. Carapace length of specimens measured, up to 9.7 mm.

Leg formula of a specimen with carapace length of 7.2 mm (Mount Macedon, BYM 65/16):

4	1	2	3
2.93	2.47	2.32	2.12

Tibial index I, 15.71; tibial index IV, 15.38.

Internal genitalia consist of two broad denticulate basal structures which, when viewed dorsally, appear as two mounds but which are in fact the mouths of two funnels leading into the 'spouts' or narrow ducts connected with the blind vesicles (figs. 13a, b and c).

Male (see fig. 42). Palp and tibia I (BYM 65/27) as figured (figs. 14 and 14a and 15). Carapace with dense marginal bristles. Differs from *S. pexa* and *S. nebulosa* by having more spines on prolateral aspect of palpal tibia. Carapace length of holotype of *Ixamatus gregori* (= *S. grisea*) 4.0 mm, and of two specimens of *S. grisea* collected by the author, 7.3 (BYM 65/23) and 7.5 mm (BYM 65/27).

Leg formula BYM 65/27.

4	1	2	3
3.2	3.03	2.89	2.45

Tibial index I = 13.58, Tibial index IV = 14.63.

Specimens examined and localities

Types as listed above and the following specimens (collected by the author except where otherwise stated).

Females and juveniles: 20, Macedon, V.; Grampian Mountains, V. 5, Barney's Creek; 1, Dairy Creek Road; 1, Stony Creek Road, about two miles from Silver Band Falls; 1, Mt. Victory Road; 2, Chataqua Park Road; 1, Mt. William Road (near top); 1, Mt. William Road, near turnoff; 4, three miles east of Myrtle Bank. Dandenong Range: 6 and one brood, Ferntree Gully, half a mile from station; 4, Sassafras Road; 1, Highett, V. (collected by E. Swarbrick and sent to the author by Professor Hickman who had labelled the specimen *Aname butleri*).

Males: 2, Macedon, V. These two specimens collected as penultimate instar males on 12.ii.1965 and held in flowerpots of soil. They moulted to maturity late February/early March.

Natural history

The spiders have a simple open burrow, with sparse silk lining. The burrows are made in damp situations of the forest floor, in deep humus and moss or amongst leaf litter. They often occur in undisturbed, wet road banks. The species appears characteristically to inhabit gullies of mountainous areas and fringes of

swampy areas where the soil is fairly well drained. Some have been found in moss and bark at the base of tree trunks.

Stanwellia nebulosa (Rainbow and Pulleine 1918)

Aname nebulosa Rainbow & Pulleine, 1918. Rec. Austr. Mus. 12: 147-8.

Stanwellia nebulosa (Rainbow & Pulleine) in Main, "Spiders of Australia" (Jacaranda 1964, 1967). New syn. *Aname confusa* Rainbow and Pulleine, 1918. Rec. Austr. Mus. 12: 155-7.

Notes on Types

Male "type" of *Aname nebulosa*, (Australian Museum, K40924), Mallala, S.A., 23.iv.1905. The collection date of this specimen is given as March 23 in Rainbow and Pulleine (1918).

The description of the male specimen precedes that of the female, therefore the male 'type' is herein designated as the lectotype of the species *Stanwellia nebulosa* (Rainbow and Pulleine).

♀ "type" of *Aname nebulosa*, Tea Gardens, Mt. Lofty, S.A., 4.xi.17, (Australian Museum K40926).

2 ♀♀ ("cotypes") (Austr. Mus. K41460), Mallala, S.A.; ♀ ("cotype") (Austr. Mus. K40930), Meningal, S.A., May 1908, [date given as 'July 1917' by Rainbow and Pulleine (1918)]. Specimens numbered as follows: Australian Museum K40926, K41460 (2 specimens), and K40930 are herein designated as paralectotypes. They were sighted by the author in 1954. ♀ 'cotype' *Aname nebulosa*, Aldgate S.A. May 24, 1910, in the South Australian Museum (sighted by the present author in 1952) and herein designated as a paralectotype. Rainbow and Pulleine (1918) also mention a specimen from "Scott's Creek" of which the whereabouts is not known.

Diagnostic description

Female: General appearance as in Fig. 43. Carapace length of paralectotype (Australian Museum K40926) 8.7 mm; leg formula:

4	1	2	3
2.71	2.27	2.27	1.94

Tibial index I, 15.78; tibial index IV, 15.38.

In life specimens are a dark, dusty brown with golden hairs and a yellow, speckled pattern on abdomen dorsum, legs paler with dark smudges. Abdomen with dorsal pile of fine hairs (fig. 16).

Internal genitalia as figured (fig. 17); similar to *S. grisea* and *S. pexa*.

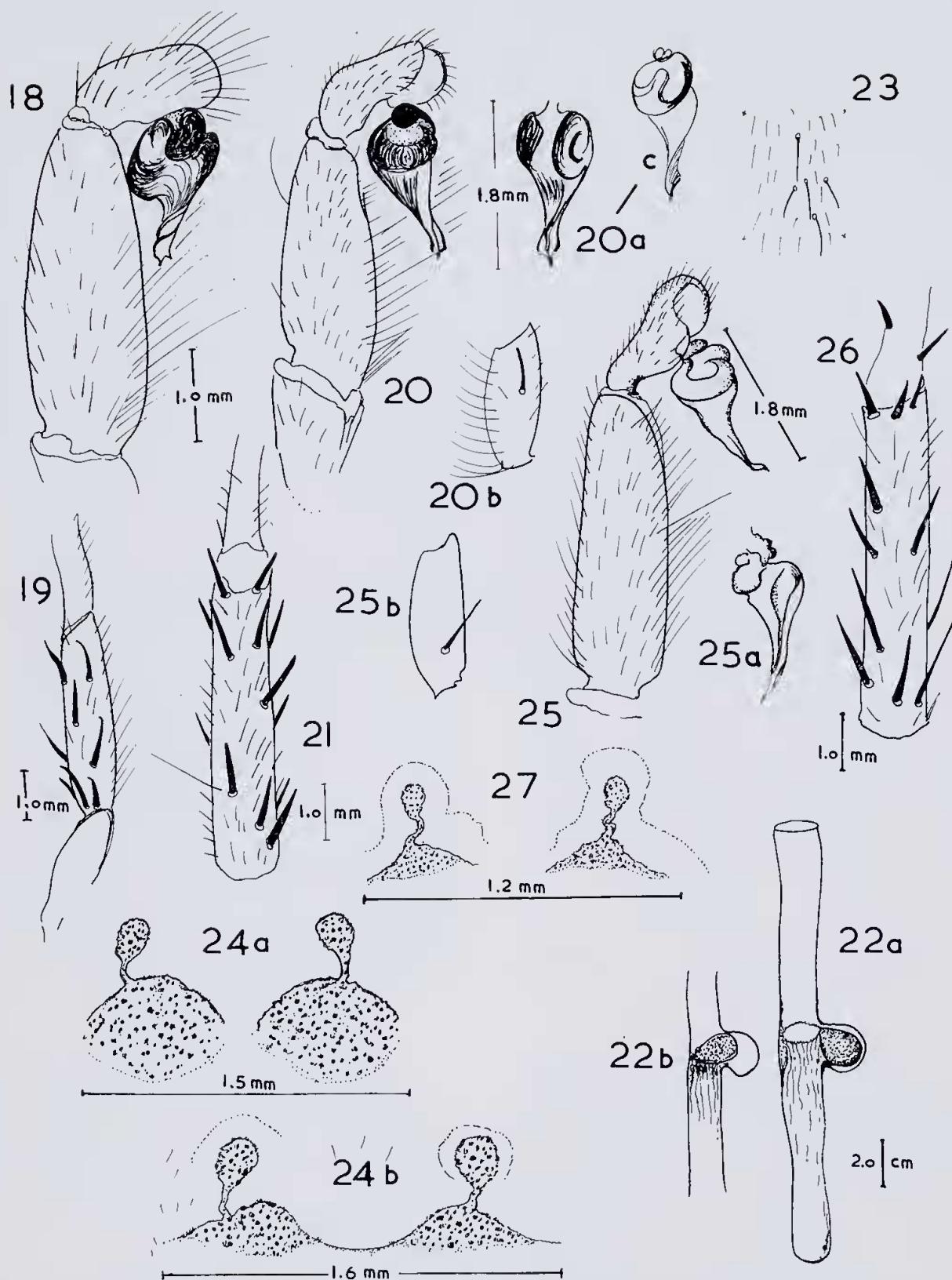
Male: Palp and tibia I as figured (figs. 18, 19 ♂ lectotype, figs. 20, 21 of BYM 54/547). Stigma long and bluntly pointed at tip; palp tibia with one large stout prolateral spine in mid region, one spine absent. Tibia I with eight ventral spines. Carapace length of lectotype 5.3 mm; carapace length BYM 54/547, 8.0 mm. The legs of the lectotype were damaged but the leg formula of BYM 54/547 is as follows:

4	1	2	3
3.93	3.60	3.52	3.10

Tibial index I = 11.11, Tibial index II = 11.90.

Specimens examined and localities

Types as above and the following specimens collected by the author (except where otherwise stated):



Figures 18-27.—18-22, *S. nebulosa*. 18, 19, ♂ lectotype, 18, right palp, retrolateral; 19, right tibia I, prolateral; 20, ♂ right palp retrolateral (BYM 54/547); 20a, c, different aspects of stigma (fig. 20c shows the same aspect as in fig. 18), 20b prolateral view of tibia; 21, ventral view right tibia I (BYM 54/547); 22a, b, longitudinal section of burrow, showing "open" position of 'pebble' in side pocket (a) and in 'closed' position (b). 23-27, *S. pexa* (Hickman). 23, 24a, (♀ specimen from Queens Domain, Tasmania, V.V.H. BYM 70/38); 23, abdominal pilosity; 24a, internal genitalia. 24b, ♀ internal genitalia (BYM 54/65); 25, a, b, ♂ palp retrolateral view, a, stigma rotated, b, tibia prolateral aspect (BYM 54/66); 26, tibia I ventral (BYM 54/66); 27, ♀ internal genitalia (BYM 70/36) (Tasmania W. coast near mouth Arthur R., V.V.H.)

Females and juveniles: South Australia: 1, Aldgate; 3, Bute; 4, Blackwood (including 1 penultimate instar ♂); 8, Blanchetown; 1, Dublin; 3, Willunga Hill, Kuitpo; 1, Nairne; 2, Port Broughton, 8 miles south; 1, Port Germain Gorge; 1, Tarlee; 2, Tintinara, 2 miles south; 1, Mount Lofty; 2, Stirling; 6, Wirrega, Victoria: 3, Nhill, 10 miles west (east of Lowlait Ranges). One female forwarded by Professor Hickman. This specimen was collected by Dr. R. H. Pulleine and the locality given only as "South Australia".

Male: Specimen BYM 54/547 was collected as an immature specimen from Willunga Hill, Kuitpo, S.A., on 18 December, 1954. The specimen was not obviously a male and was kept for observation in a flowerpot of soil in which it made a characteristic burrow. It was found to be mature on 2 April, 1956.

Natural History

The spiders build a distinctive vertical burrow. The entrance may have a small collar of leaves but the upper section is unwebbed. The lower half is silk-lined. A pear-shaped pebble made by the spider of compacted soil is attached to one side of the free, collar-like upper part of the silk lining. The pebble is so counter-weighted, that when the spider is disturbed and pulls on the silk collar, it falls across and blocks the burrow lumen (see figs. 22a, b). Rainbow and Pulleine (1918, pp. 82-3, pl. 20) originally described this curious structure, and Main (1964, 1967, pp. 44, 45) again figured and described it. Specimens in captivity have also been observed constructing the characteristic burrow.

The species generally occurs in drier situations than do the eastern species. It extends from damp situations in gullies of the Lofty Mountains near Adelaide, eastward into the dry limestone soils of the mallee region of south-eastern S. A. and western Victoria and northwards through the Flinders Range to Port Augusta.

Stanwellia pexa (Hickman 1929)

♂, ♀ *Aname Pexa* Hickman, 1929. Proc. Roy. Soc. Tasmania, 1929, 87-97, figs. 1-6.

Types

Queen Victoria Museum, Launceston, Tasmania.

Type locality, Prince of Wales Bay, Derwent Park (not seen by the present author). The male description precedes that of the female and is herewith designated as the lectotype, and the female as paralectotype.

Hickman in his description of the female (Hickman, 1929) states the claw of the female palp "with a double row of teeth". However, I noted that on a specimen sent by Professor Hickman to the British Museum (Natural History) teeth were present only on the prolateral side of the palp claw [B. M. (N. H.) Register No. 1931. 70.30.51]. Professor Hickman (in litt.) has now confirmed that his original statement was in error and that *S. pexa* has only a single row of teeth on the palpal claw.

Female: Dark coloured and with conspicuous markings on legs, abdomen irregularly mottled or banded. Sparse pile of fine hairs and bristles

(fig. 23). Internal genitalia similar to *S. grisea* and *S. nebulosa*. The basal funnels may be large (fig. 24a) or small (fig. 24b). Specimens with carapace length up to 12.9 mm.

Male: Palp and tibia I as figured (figs. 25, 26), specimen from Fisher Island (BYM 54/66). The palpal stigma is generally relatively longer and more tapering than that of other species. Carapace length of mature males is variable: male type 7.0 mm. (Hickman 1929); male from The Domain, Hobart, Tasmania, 7.0 mm; of four males from Fisher Island, carapace lengths as follows: 8.7, 9.0, 9.7 and 10.00 mm. Leg formula and tibial indices of BYM 54/66.

4	1	2	3
3.57	3.36	3.26	2.84

Tibial index I = 12.17, Tibial index IV = 12.82
Leg formula of male type [calculated from Hickman's measurements (Hickman 1929, pp. 87-8)].

4	1	2	3
3.26	2.87	2.78	2.43

Tibial index I, 14; tibial index IV, 14 (Hickman 1929).

Specimens examined and localities

1♀ British Museum specimen. 6♀♀, 4♂♂ Fisher Island (collected by V. N. Serventy); 2♀♀ from Queen's Domain, Hobart and 1♂ from The Domain Hobart, Tasmania (collected by V. V. Hickman); 3♀♀ from north of mouth of Arthur River, west coast Tasmania (collected by V. V. Hickman), tentatively identified as *S. pexa*, internal genitalia of one specimen as in fig. 27 (BYM 1970/36).

Natural History

Hickman (1929) described the burrow as being vertical with a collar of grass stalks at entrance and with a swelling near base, the whole with only a sparse lining of silk. Burrows were up to 15.0 cms. deep and were in a bank about ten yards from the sea-shore in a patch of scrub. V. N. Serventy reported (personal communication) that vertical and oblique burrows, all without any closure, were constructed by specimens on Fisher Island.

Stanwellia occidentalis sp. nov.

Types

Holotype ♀, mouth of the Todd River north of Port Lincoln, Eyre Peninsula, South Australia, collected by B. Y. Main, 16 December, 1952 (BYM 52/533). Australian Museum No. K69302.

Paratype ♀, Cummins Plains, east of Cummins, Eyre Peninsula, S.A., collected by B. Y. Main, 16 December, 1952 (BYM 52/561). Specimen with young in burrow. Australian Museum No. K69301.

Paratype ♀, Cummins, 8 miles east, Eyre Peninsula, S.A., collected by B. Y. Main 17 December, 1952 (BYM 52/575), South Australian Museum No. N19719.

Description of holotype

Female (fig. 28). Carapace glabrous, dark brown, almost straight sided. Legs pale coloured with dark brown blotches and annulations as

follows: I and II, femur with proximal and distal annulation; patella distal annulation; tibia, proximal and distal annulation; metatarsus and tarsus, pale with dark smudges; III and IV, faint annulations on femur, patella tibia, pale coloured metatarsus and tarsus. *Carapace* 3.9 mm long, 2.9 mm wide, caput 2.3 mm wide. *Fovea* almost straight, slightly procurved. *Abdomen* 6.0 mm long, 3.8 mm wide, almost straight-sided. *Sternum* 1.9 mm long, 1.6 mm wide, sigilla indistinct (fig. 29). *Labium* 0.5 mm long, 0.65 mm wide, 1 cuspule. *Maxillae* with about 16 cuspules. *Chelicerae*, promargin of groove with 7 teeth, a basal outer cluster of about 15 granules. *Rastellum* of heavy teeth above base of fang, and around apical angle (fig. 29); teeth not on a process. This *rastellum* is as pronounced as in many Ctenizidae, for example as in *Dyarcops*.

Spines. Palp, tibia 8 ventral. I, metatarsus 4 ventral, 1 prolateral; tibia, 3 retroventral. II, metatarsus, 5 ventral, 1 dorsal; tibia, 3 (bristle-like) ventral. III, metatarsus, 4 ventral, 5 dorsal, 3 prolateral; tibia, 3 dorsal, 2 prolateral; patella, 3 stout prolateral (like a Ctenizid). IV, metatarsus, 7 ventral, 3 dorsal, 1 prolateral; tibia, 1 apical ventral.

Scopula complete on tarsi I and II and palp and metatarsus I; apical hairs on metatarsus II, absent on third and fourth legs. *Trichobothria* few, up to 6 or 7 in dorsal irregular line on tarsus, metatarsus and tibia.

Leg formula	4	1	2	3
	2.46	2.35	2.1	1.74

Tibial index I, 14.28; tibial index IV, 15.78.

Abdomen oval, almost straight sided with a dark median area, otherwise a uniformly mottled pattern of yellow flecks. Sparse pile of hair. Terminal segment of posterior spinnerets relatively short and pointed. Internal genitalia not dissected but can be distinguished through the integument as being of the dual 'mound' or 'funnel' type, i.e. with two clearly separated basal mounds. Genitalia of one paratype dissected (fig. 30). *Carapace* length paratype (BYM 52/575), 4.1 mm; paratype (BYM 52/561), 6.4 mm, this being the largest specimen of the species observed.

Natural History

The holotype was collected from a simple burrow in a sea cliff, overlooking the mouth of the Todd River. The cliff face was overhung by shrubs. High tide washed the cliff base. A flimsy cocoon of eggs was found in the burrow. It contained eleven subspherical eggs, all at an early developmental stage, with diameter of 2.0 mm.

The Cummins specimens occurred under mallee, two in moss-grown creek alluvium, two under mallee litter; the "Coomunga Springs" spider was found with other mygalomorphs under an isolated clump of bottlebrush in a grassy, farm paddock; the Streaky Bay spider was under casuarinas. The silk-lined burrows have the mouth formed into a silk collar, which may be retracted to close the burrow. A soil plug may be placed beneath the closed collar thus effectively sealing the nest. In the sealed burrow

of one paratype (BYM 52/561) was a cluster of fifty-five recently hatched spiderlings; these had no pigment and had carapace lengths of 1.1 or 1.2 mm.

Adult Male unknown.

Specimens examined and localities

S.A.: ♀, mouth of the Todd River north of Port Lincoln, Eyre Peninsula, (holotype); 2, Cummins, 8 miles east, (includes paratype, BYM 52/575); 1, Cummins Plains (paratype BYM 52/561); 1, "Coomunga Springs", west of Port Lincoln.

Immature males: 1, Cummins, 8 miles east; 1, Streaky Bay, east of; 1, Port Lincoln.

W.A.: 2 juveniles and one immature ♂ (?), Porongorups Range (near Bolganup dam), (collected by J. Springett by sieving litter and humus); 1 juvenile 3 miles north of Mammoth Cave, W.A.

The Western Australian specimens and other South Australian specimens all agree with the holotype in the presence of a definitive 'pseudorastellum', uniformly mottled abdomen, the distinctive annulations on the legs, absence of scopula on third and fourth tarsi and fewer spines on the legs, especially of the third and fourth. It is the combination of these features and the small size which distinguishes *occidentalis* from the other species.

Stanwellia inornata sp. nov.

Types

Holotype, ♀, Rose's Gap, Grampian Mountains, Victoria, collected by B. Y. Main, 28 November, 1965 (BYM 65/704), [Australian Museum No. K69299]

♂ Paratype (BYM 65/706), [Australian Museum No. K69300]

♀ Paratype (BYM 65/711), [National Museum No. K-25]

Data for paratypes as for holotype.

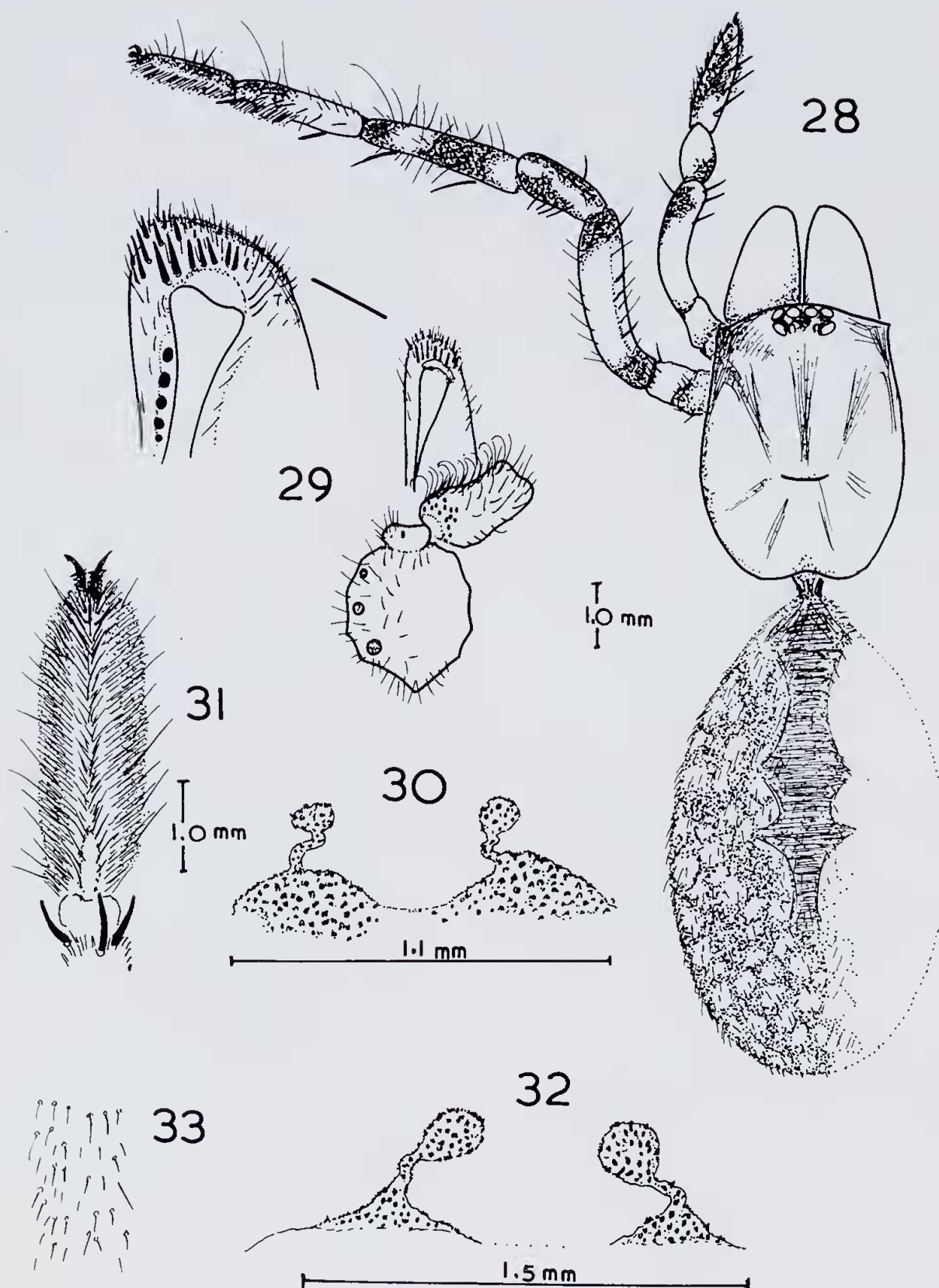
Description of Holotype

Female: *Carapace* length, 8.8 mm, width 7.3 mm. Colour, uniform dusky brown, in life no pattern visible on legs or abdomen, generally brown and hairy-looking with golden sheen. *Fovea* almost straight. Anterior width of eye group 1.8 mm. *Labium*, length 1.1 mm, width 1.7 mm, 2 cuspules, *sternum* length 4.9 mm, width 3.8 mm, sigilla oval. *Chelicerae* with 9 teeth on promargin of furrow, basal cluster on outer margin extending up to about fourth inner tooth. Palp tarsi each with single basal fine tapering spine. Legs, scopula present on all tarsi and metatarsi I and II, a few apical hairs on metatarsi III. Scopula of tarsi III and IV divided by band of median bristles (fig. 31). Tarsal claws with 4 to 8 teeth in each comb of bipectinate claws.

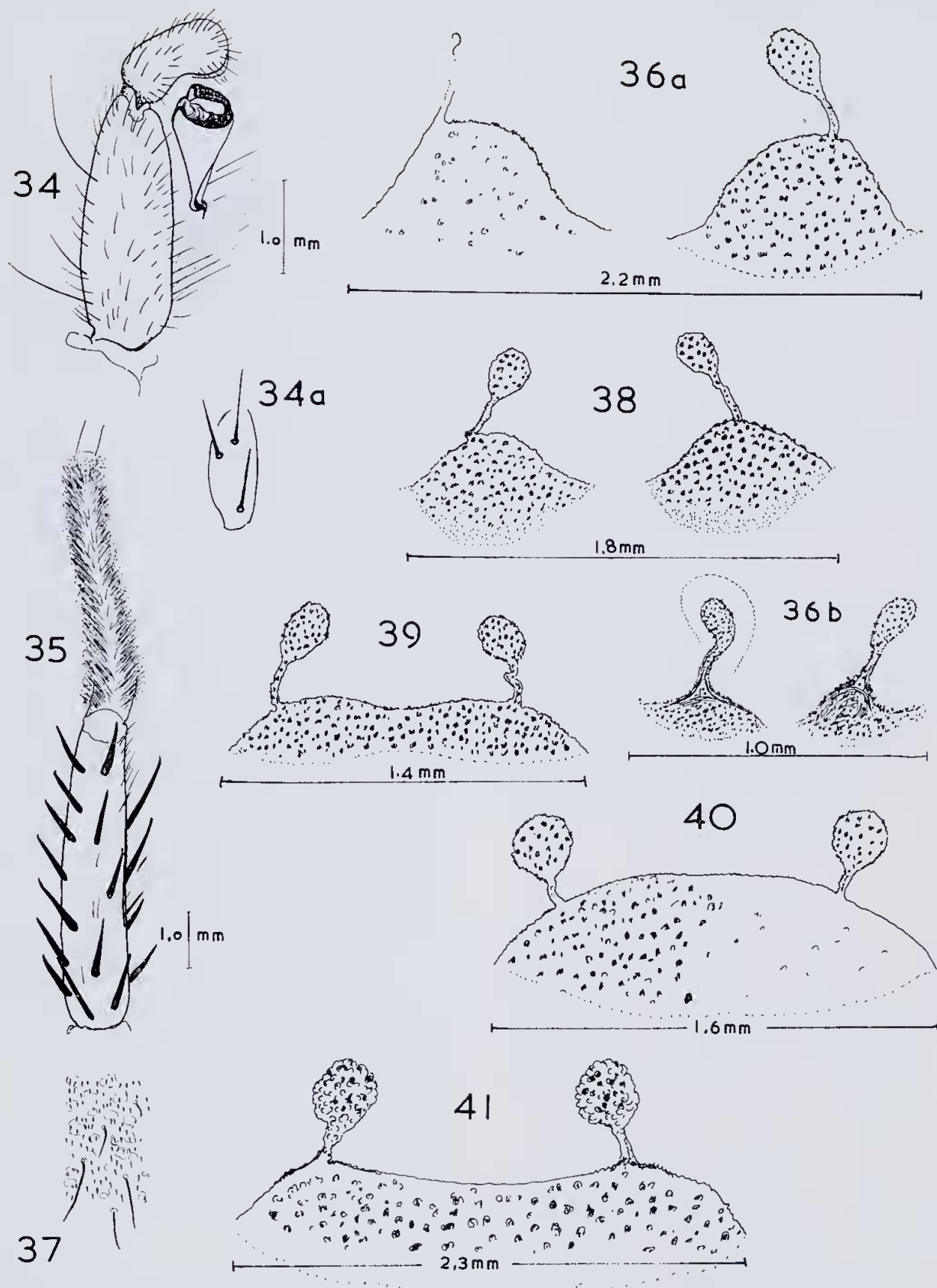
Leg formula:	4	1	2	3
	2.57	2.55	2.31	2.23

Tibial index I, 14.6, Tibial index IV, 14.7

Spines. Distribution of spines as follows: No dorsal spines or bristles on femurs. I, Metatarsus, 2-1-2 ventral; Tibia, 3 apical ventral spines and 3 ventral bristles, 3 prolatero-dorsal. II, Metatarsus, 2-2-2 ventral, 1 prolateral; Tibia,



Figures 28-33.—28-30, *S. occidentalis* Main. 28, dorsal view ♀ (Holotype); 29, chelicerae, labium and sternum. (Holotype); 30, ♀ internal genitalia (Paratype, BYM 52/561). 31-35, *S. inornata* Main. 31, left tarsus III, ventral; 32, ♀ internal genitalia (Paratype BYM 65/711); 33, abdominal pilosity (BYM 65/705).



Figures 34-41.—34-35, *S. inornata* (♂ paratype). 34, right palp retrolateral, 34a, tibia prolateral; 35, right tibia I ventral. 36-41, unidentified *Stanwellia* specimens. 36a b, ♀ internal genitalia, 36a (BYM 65/41), 36b (BYM 65/39); 37, abdominal pilosity (65/685); 38-41, ♀ internal genitalia, 38 (BYM 65/685); 39 (BYM 65/677); 40 (BYM 59/404); 41 (BYM 65/48).

3 spines and 3 ventral bristles. III, Metatarsus, 2-2-1 ventral; Tibia, 7 fine tapering ventral spines, 6 dorsal, 4 prolateral, 1 retrolatero-ventral; Patella, 1 dorsal; 4 stout prolateral; 2 retrolateral. IV, Metatarsus, 2-1-1-2 ventral, 2-1-2 dorsal, 1 prolatero-ventral; Tibia, 2 spines and 4 bristles ventral, 2 prolatero-dorsal.

Palp. Tarsus, 1 basal; Tibia, 2 apical ventral spines and 6 ventral bristles; 2 spines and 2 bristles prolateral.

Paratype Female: Carapace length 8.5 mm, width 6.5 mm.

Labium with 3 cusps. Internal genitalia consist of small basal, denticulate mounds connected by thin, bent tubes to globose vesicles (fig. 32).

Paratype male: Carapace length 7.0 mm, width 5.8 mm. Colour generally a uniform dusky brown, no pattern apparent on legs or abdomen in life. Carapace with dense marginal hairs. Generally hirsute, the hairs with golden sheen; abdomen with long fine bristles amongst the hairs. Palp as figured (fig 34); right tibia with three long fine prolateral bristles (fig 34a), left tibia with only two bristles. Tibia I with 7 ventral spines, 6 retrolatero-ventral, 6 prolatero-ventral (fig. 35).

Leg formula:

4	1	2	3
3.5	3.48	3.16	3.16

Tibial index I 12.36. Tibial index IV 13.25.

S. inornata differs from other described males of *Stanwellia* in having more attenuated palpal-stigma and relatively longer, thinner legs and lacks a distinct mottled colour pattern.

Specimens examined

Three types as above and two other females (of which one specimen (BYM 65/705) has four labial cusps; and abdominal pilosity as figured (fig. 33)), all from Rose's Gap, Grampian Mts., Victoria.

Distribution of S. inornata and S. grisea in the Grampian Mountains

The occurrence of what appear to be two species in the Grampian Mountains is notable. *S. grisea* occurs in the eastern gullies of the mountains, *S. inornata* has been found only along a creek in Rose's Gap (but probably extends farther). This latter area has a sandy soil type and a heath vegetation understorey which is distinct from the plant associations of the eastern regions. At this same locality *Aganippe* was also collected. This ctenizid genus has not been observed in the wetter, eastern localities of the mountain range.

Unidentified Stanwellia specimens examined

The following specimens were all collected by the author except where otherwise stated.

2 ♀♀ and 2 juveniles, Lakes Entrance, V. 1 ♀ Harris Creek, V. 3 ♀♀ and 1 juvenile, 30 miles from Orbost on Bonang Highway. The internal genitalia of two females (BYM 65/41 and 65/39 with two basal denticulate mounds as in figs. 36a and b. 1 ♀ Otway Ranges, V. This specimen (BYM 65/685) in life glabrous and a uniform, light tan colour, lacking dark smudges

or annulations on the legs. Abdomen with short, thornlike bristles and long tapering bristles (fig. 37). Internal genitalia with large basal mounds (fig. 38). 5 ♀♀ Lake Mountain, V. One female (BYM 65/677) with internal genitalia as in fig. 39. 1 ♀ Mount Beauty, V. 9 ♀♀ Donna Buang, V; internal genitalia (BYM 59/404) as in fig. 40. 1 ♀, Mt. Ben Lomond (4000') Tasmania (collected by V. V. Hickman); 1 ♀ and 1 immature specimen Table Cape, Tasmania (collected by V. V. Hickman). 1 ♀ about 1 mile N. Piccadilly Circus, Brindabella Ranges, A.C.T. (internal genitalia as illustrated in fig. 41, BYM 65/48); 1 ♀ Uriarra State Forest, A.C.T. (BYM 65/44), internal genitalia similar to BYM 65/48; 1 ♀ Black Mountain, A.C.T. collected by A. R. Main; 1 ♀ Brindabella Ranges, A.C.T. collected by A. R. Main; 2 ♂♂ Coree Flats, Brindabella Ranges, A.C.T. collected by R. Pengelly. All these A.C.T. specimens were at first thought to be *S. hoggi*. Some of them were collected in association with *Dyarcysops fuscipes* (Rainbow), which is a common ctenizid of the Sydney and Blue Mountains' regions. However, when the Brindabella specimens were observed to have a distinctive type of internal genitalia (fig. 41), similar only to high, mountain-locality specimens from Victoria (Lake Mountain and Donna Buang, (figs. 39, 40) the possibility that they were of an



Figure 42.—*Stanwellia grisea* (Hogg) Dorsal view of male specimen. Note that there is no spur on tibia of first leg (BYM 65/23). (Natural size x 1.7)



Figure 43.—*Stanwellia nebulosa* (Rainbow and Pulleine)
Dorsal view of female specimen (BYM 55/727) (Natural
size x 1.8)

undescribed species, perhaps with relictual populations scattered along mountain tops of the southern part of the Dividing Ranges had to be considered.

Taxonomic Value of Female Internal Genitalia

Schiapelli and Pikelin (1962) and Forster and Wilton (1968) have used the internal female genitalia to distinguish genera and species of Mygalomorphae. The present author while regarding this structure as a useful guide, especially to *genera*, has noted variability of outline contours amongst specimens of the one species, as in *S. grisea* and *S. pexa*. Also the similarity of basic form between certain species is such that, alone, this character would not distinguish the species. Specimens of *S. grisea*, *pexa*, *occidentalis*, *inornata* and several unnamed populations all have the basic form of two mound-like 'funnels' each connected to a blind vesicle. The vesicle may be ovoid or spherical, the connecting duct straight or bent and the 'funnels' large and rounded or suppressed. It is possible that the degree of 'inflation' of the vesicles and basal mounds may

be related to sexual activity of the animal. This requires investigation by collection and dissection of animals from the one locality at different times of the year. The degree of distension of the genitalia parts does not appear to be related to gross size of the animal but may possibly be affected by partial dessication. Unnamed high-mountain forms of *Stanwellia* have a single, broad basal mound giving off two ducts which connect to the vesicles (figs. 39, 40, 41). Probably this basal mound represents a fusion of two single 'funnels'. It is interesting that Forster and Wilton (1968) figured two basic forms of genitalia structure for the New Zealand genus *Aparua* which are similar to the two basic forms observed in the related *Stanwellia*. The structure of the internal genitalia of *S. hoggi* has not been observed.

Discussion

Biology and Life History

From collection dates of males and the seasonal occurrence of eggs in the burrow it is deduced that *Stanwellia* males wander and mate in the autumn and that eggs are laid in late spring. Presumably, young disperse in the autumn and early winter. It is possible that this biological association with an autumn/winter wet season has been the chief factor restricting the range of the genus northward into the summer rainfall/winter drought regions of Australia. The genus appears to be tied to autumn/winter rain for breeding and dispersal and at the same time requires continual year-round humidity (except possibly *S. nebulosa* which is the only species occurring in a region of severe summer-drought). *S. occidentalis* in Eyre Peninsula, and in the south-west localities of Western Australia, occurs in situations where the micro-habitat effectively simulates a continuously 'humid' environment.

Geographic Distribution

The distribution of *Stanwellia* is of interest for several reasons:

(i) It occurs in extreme types of habitats ranging from mountainous situations above the snow line (for example in the Brindabella Range, A.C.T., Lake Mountain and Donna Buang, Victoria and other localities in Victoria), on islands of the Bass Strait, to semi-desert habitats in the limestone country of western Victoria, eastern S.A. and to coastal cliffs just above the sea in Eyre Peninsula. Associated with these great habitat differences are behavioural adaptations, notably in the structure of burrows.

(ii) Occurrence of the genus in the south western corner of W.A. probably represents an isolated relict of an earlier continuity along the coastal strip from S.A. This particular westward extension in range of an essentially south-eastern Australian genus, appears to parallel the former range of some mammals, such as the Tasmanian devil and koala, fossils of which have been found in limestone caves of south-western W.A. Apparently, because of the smaller size and minimal area requirements of the spider it has been able to persist in restricted

localities after the mammals became extinct in the region. This disjunct distribution parallels in part that of the Mygalomorph family Migidae. An undetermined genus of the subfamily Calathotarsinae occurs in the Stirling Ranges and Porongorups in Western Australia and the Grampians and mountains north of Melbourne in Victoria (Main unpublished data).

(iii) The morphological similarity of *Stanwellia* and the New Zealand genus *Aparua* Todd indicates a close relationship between the two. Such a fragmented distribution possibly implies great antiquity and parallels in part the similar fragmented distribution of other Mygalomorphae common to Australia and New Zealand notably *Hexathele* (sub-family Hexathelinae of Dipluridae) which is found right down eastern Australia, westward into S.A. and also in Tasmania; *Migas* (family Migidae) occurs in New Zealand and Tasmania but not mainland Australia; *Dyarcyops* (family Ctenizidae) ranges from New Guinea [two species at present included in *Arbanitis* (Rainbow 1920)], through eastern mountainous Australia to Tasmania and westward to S.A. It also occurs in New Zealand where its species are included in *Cantuaria* by Forster (1967) and in Forster and Wilton (1968).

(iv) The southern and essentially south-eastern distribution of *Stanwellia* (it has not been found north of Sydney and does not extend into Queensland) and its close relationship to the New Zealand genus *Aparua*, suggests an ancient origin. The possibility of affinities with South American and/or South African and Mascarene genera might profitably be looked for.

Deposition of Specimens

Types of earlier described species, specimens cited by previous authors, and various formerly unnamed specimens sighted by the present author are located in museums as listed above under the species. All new types (see species descriptions above) are being deposited in the Australian Museum, Sydney, the National Museum, Melbourne and the South Australian Museum. The following specimens which have been cited in the text have been deposited in the Australian Museum; corresponding Museum register numbers are given in brackets after the author's numbers.

Stanwellia grisea (Hogg): BYM 65/11 (K69308), BYM 65/16 (K69306), BYM 65/27 (K69307), BYM 65/693 (K69305).

S. hoggi (Rainb.): ♂ specimen collected by R. Mascord (KA1).

S. nebulosa (Rainbow and Pulleine): BYM 55/727 (K69303), BYM 59/425 (K69304). *S. pexa* (Hickman): BYM 54/65 (K69309), BYM 54/66 (K69310), BYM 70/38 (a ♀ specimen collected by V. V. Hickman from Queen's Domain, Hobart) (K69312), BYM 70/36 (collected by V. V. Hickman from west coast Tasmania) (K69311). Unidentified *Stanwellia* specimens: BYM 59/404 (K69313), BYM 65/39 (K69314), BYM 65/41 (K69317), BYM 65/48 (K69315), BYM 65/677 (K69316), BYM 65/685 (K69318). All other specimens in the author's collection

are lodged at the Zoology Department, University of Western Australia.

Acknowledgements

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